

IN THE CLAIMS

1. (Currently Amended) A method of determining ~~a proper~~ an acceptable overlay tolerance in a photolithography process, comprising the steps of:

using a photolithography process to form first and second layers of patterns on a wafer, each of a set of patterns of said second layer being overlaid, with an associated ~~tolerance~~ overlay offset, with an associated one of the patterns of said first layer[;], including the steps of:

i) exposing the wafer at different critical dimensions, and

ii) varying the associated overlay offsets across the wafer; and

~~varying the associated tolerances across the wafer; and~~

using functional yield data from the wafer to determine ~~a proper~~ an acceptable overlay tolerance for patterns of said first and second layers.

2. (Previously Presented) A method according to Claim 1, wherein the step of using a photolithography process includes the step of exposing the wafers at critical dimensions relative to an optimum image size.

3. (Previously Presented) A method according to Claim 2, wherein the step of exposing the wafers at critical dimensions includes the step of exposing the wafer at critical dimensions above, below and at the optimum image size.

4. (Previously Presented) A method according to Claim 1, wherein the varying step includes the step of varying the overlay across the wafer by intentionally changing the magnification.

5. (Currently Amended) A method according to Claim 4, wherein the step of varying the overlay across the wafer includes the step of varying the overlay tolerance offset across the wafer by intentionally increasing the magnification

6. (Currently Amended) A method according to Claim 1, wherein the step of using functional yield data includes the steps of:

testing the wafers to identify a good region and a bad region; and

identifying the overlay tolerance offset, at which the bad region begins, as said ~~proper~~ acceptable overlay tolerance.

7. (Currently Amended) A method according to Claim 1, wherein the step of using a functional yield data includes the step of:

searching the overlays across one of the wafers for a defined feature; and

if the defined feature is found in one of the searched overlays, identifying the overlay tolerance of said one of the overlays as the ~~proper~~ acceptable overlay tolerance.

8. (Currently Amended) A system for determining a ~~proper~~ acceptable overlay tolerance in a photolithography process, comprising:

photolithography apparatus to form first and second layers of patterns on a wafer, each of a set of patterns of said second layer being overlaid, with an associated tolerance overlay offset with an associated one of the patterns of said first layer[;], including

i) means for exposing the wafer at different critical dimensions, and

ii) means for varying the associated overlay offsets across the wafer, and

~~means for varying the associated tolerances across the wafer, and~~

means for using functional yield data from the wafer to determine ~~a proper~~ an acceptable overlay tolerance for patterns of the first and second layers.

9. (Previously Presented) A system according to Claim 8, wherein the photolithography apparatus includes means for exposing the wafers at critical dimensions relative to an optimum image size.

10. (Previously Presented) A system according to Claim 9, wherein the means for exposing the wafers at critical dimensions includes means for exposing the wafer at critical dimensions above, below and at the optimum image size.

11. (Currently Amended) A system according to Claim 8, wherein the varying means includes means for varying the overlay offset across the wafer by intentionally changing the magnification.

12. (Currently Amended) A system according to Claim 11, wherein the means for varying the overlay ~~tolerance~~ offset across the wafer includes means for varying the overlay ~~tolerance~~ offset across the wafer by intentionally increasing the magnification.

13 (Currently Amended) A system according to Claim 8, wherein the using means includes:
means for testing the wafers to identify a good region and a bad region; and
means for identifying the overlay ~~tolerance~~ offset, at which the bad region begins, as said ~~determined proper~~ acceptable overlay tolerance.

14. (Currently Amended) A system according to Claim 8, wherein the using means includes:
- means for searching the overlays across the wafer for a defined feature; and
 - if the defined feature is found in one of the searched overlays, means for identifying the overlay tolerance of said one of the overlays as the ~~determined~~ acceptable overlay tolerance.
15. (Currently Amended) A method of determining an acceptable overlay tolerance in a photolithography process, comprising the steps of:
- providing a multitude of wafers:
 - for each of the wafers,
 - i) using a photolithography process to form first and second layers of patterns on a wafer, each of a set of patterns of said second layer being overlaid, with an associated ~~tolerance~~ overlay offset, with an associated one of the patterns of said first layer, and
 - ii) exposing the wafer at different critical dimensions, and
 - iii) varying the associated tolerances overlay offsets across the wafer, and
 - using functional yield data from the wafers to determine ~~proper~~ acceptable overlay tolerances for patterns of said first and second layers.
16. (Currently Amended) A method according to Claim 15, wherein,
- said set of patterns including multiple images sizes; and
 - the step of using functional yield data includes the step of using the functional yield data to determining a ~~proper~~ an acceptable overlay tolerance for each of said image sizes.

17. (Currently Amended) A method according to Claim 15, wherein the varying step includes the step of varying the tolerances offsets across the wafer by changing the magnification.

18. (New) A method according to Claim 15, wherein the varying step includes the step of varying the tolerances offsets across the wafer by increasing the magnification. - -